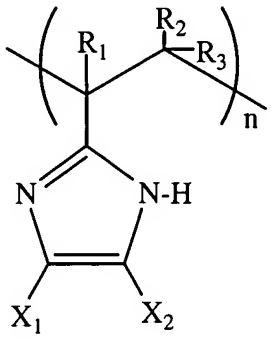
AMENDMENTS TO THE CLAIMS

Claims 1-24 (Canceled)

25. (Original) A fuel cell having a proton exchange membrane, said membrane comprising a polyimidazole polymer of the type:



wherein R_1–R_3 are independently H, a halogen, alkyl, or a substituted alkyl; and wherein X_1 and X_2 are independently H or an electron withdrawing group.

26. (Original) The fuel cell of claim 25, wherein X_1 and X_2 are each CN.

27. (Original) The fuel cell of claim 25, wherein said membrane further includes a polar solvent dissolved therein.

28. (Original) The fuel cell of claim 25, wherein said membrane further includes a dopant therein.

29. (Original) The fuel cell of claim 25, wherein said dopant comprises a strong acid.

30. (Original) The fuel cell of claim 29, wherein said strong acid is selected from the group consisting of nitric acid, phosphoric acid, polyphosphoric acid, sulfuric acid, and combinations thereof.

31. (Original) The fuel cell of claim 25, wherein said membrane comprises a copolymer of said polyimidazole polymer and another material.

32. (New) The fuel cell claim 25, wherein R_1–R_3 are independently H or a C_1-C_5 alkyl.

33. (New) The fuel cell of claim 25, wherein X_1 and X_2 are independently: NR_3^+, SR_2^+, NO_2, SO_2R, CN, SO_2Ar, COOR, NRCOR, OR, SR, C≡CR, Ar, $CR{=}CR_2$; wherein R is: H, alkyl, or substituted alkyl, and wherein Ar is an aromatic group.

34. (New) The fuel cell of claim 27, wherein said polar solvent is selected from the group consisting of N-methylpyrrolidone, dimethylformamide, dimethylsulfoxide, and combinations thereof.

35. (New) The fuel cell of claim 29, wherein said strong acid is an organic acid.

36. (New) The fuel cell of claim 25, wherein the polymer comprising said membrane has a molecular weight in the range of 5×10^3-10^7 daltons.

37. (New) The fuel cell of claim 25, wherein said membrane has a thickness in the range of 25-200 microns.

38. (New) The fuel cell of claim 25, wherein said membrane has an electrical conductivity greater than 0.01 S/cm.

39. (New) The fuel cell of claim 25, wherein said membrane comprises a polyimidazole polymer which is copolymerized with an acidic monomer.

40. (New) The fuel cell of claim 39, wherein said acidic monomer is an acidic vinyl monomer.

41. (New) The fuel cell of claim 40, wherein said acidic vinyl monomer is selected from the group consisting of: vinyl phosphonic acid, vinyl sulfonic acid, styrene sulfonic acid, and combinations thereof.

42. (New) The fuel cell of claim 25, wherein R_1–R_3 are fluorine.

43. (New) The fuel cell of claim 25, wherein said membrane includes a heteropolyacid.

44. (New) The fuel cell of claim 43, wherein said heteropolyacid is selected from the group consisting of: monododecylphosphate, phosphotungstic acid, silicotungstic acid, phosphomolybdic acid, and combinations thereof.

45. (New) The fuel cell of claim 43, wherein said heteropolyacid is adsorbed on a carrier which is dispersed in said polymer.

46. (New) The fuel cell of claim 45, wherein said carrier comprises silica.

47. (New) The fuel cell of claim 25, wherein said polymer includes a silicon compound therein.

48. (New) The fuel cell of claim 47, wherein said silicon compound comprises SiO_2.

49. (New) The fuel cell of claim 47, wherein said silicon compound comprises a network of –Si–O–Si– which extends through at least a portion of said membrane.